

We claim:

1. A radiographic imaging assembly that has a system speed of at least 1400 and comprises:

A) a symmetric radiographic silver halide film having a film speed of at least 900 and comprising a support that has first and second major surfaces and that is capable of transmitting X-radiation,

said radiographic silver halide film having disposed on said first major support surface, one or more hydrophilic colloid layers including a first silver halide emulsion layer, and having on said second major support surface, one or more hydrophilic colloid layers including a second silver halide emulsion layer,

each of said first and second silver halide emulsion layers comprising tabular silver halide grains that have the same or different composition and independently an aspect ratio of at least 35 and an average grain diameter of at least 3.0 μm , and comprise at least 90 mol % bromide and up to 3 mol % iodide, both based on total silver in said grains, and

B) a fluorescent intensifying screen arranged on each side of said radiographic silver halide film, said screen having a screen speed of at least 600 and a screen sharpness measurement (SSM) value greater than reference Curve A of FIG. 4, and comprising an inorganic phosphor capable of absorbing X-rays and emitting electromagnetic radiation having a wavelength greater than 300 nm, said inorganic phosphor being coated in admixture with a polymeric binder in a phosphor layer onto a flexible support and having a protective overcoat disposed over said phosphor layer.

2. The radiographic imaging assembly of claim 1 wherein said tabular silver halide grains in said first and second silver halide emulsion layers are composed of at least 95 mol % bromide and up to 0.5 mol % iodide, both based on total silver in the emulsion layer.

3. The radiographic imaging assembly of claim 1 wherein said tabular silver halide grains in said first and second silver halide emulsion layers independently have an aspect ratio of from about 35 to about 45, an average grain diameter of at least 4.0 μm , and independently an average thickness of from about 0.08 to about 0.12 μm .

4. The radiographic imaging assembly of claim 1 wherein said tabular silver halide grains in said first and second silver halide emulsion layers are dispersed in a hydrophilic polymeric vehicle mixture comprising at least 0.25% of oxidized gelatin, based on the total dry weight of said hydrophilic polymeric vehicle mixture, and

5. The radiographic imaging assembly of claim 1 wherein said tabular AgX grains in said first and second silver halide emulsion layers are dispersed in up to 1.5% deionized oxidized gelatin, based on the total dry weight of said hydrophilic polymer vehicle mixture.

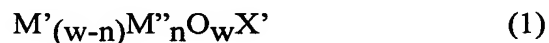
6. The radiographic imaging assembly of claim 5 wherein said tabular AgX grains in said first and second silver halide emulsion layers are dispersed from about 0.4 to about 0.6% deionized oxidized gelatin, based on the total dry weight of said hydrophobic polymer vehicle mixture.

7. The radiographic imaging assembly of claim 1 wherein the amount polymer vehicle on each side of said support is from about 30 to about 40 mg/dm^2 , and the level of silver on each side of said support is from about 18 to about 24 mg/dm^2 .

8. The radiographic imaging assembly of claim 1 wherein said radiographic silver halide film contains no incorporated crossover control agent.

9. The radiographic imaging assembly of claim 1 wherein said inorganic phosphor is a terbium activated gadolinium oxysulfide.

10. The radiographic imaging assembly of claim 1 wherein said inorganic phosphor is a rare earth oxychalcogenide and oxyhalide phosphor that is represented by the following formula (1):



wherein M' is at least one of the metals yttrium (Y), lanthanum (La), gadolinium (Gd), or lutetium (Lu), M'' is at least one of the rare earth metals, preferably dysprosium (Dy), erbium (Er), europium (Eu), holmium (Ho), neodymium (Nd), praseodymium (Pr), samarium (Sm), tantalum (Ta), terbium (Tb), thulium (Tm), or ytterbium (Yb), X' is a middle chalcogen (S, Se, or Te) or halogen, n is 0.002 to 0.2, and w is 1 when X' is halogen or 2 when X' is a middle chalcogen.

11. The radiographic imaging assembly of claim 10 wherein said inorganic phosphor is a lanthanum oxybromide, or a terbium-activated or thulium-activated gadolinium oxide or oxysulfide.

12. The radiographic imaging assembly of claim 1 wherein said inorganic phosphor is an alkaline earth metal phosphor that is the product of firing starting materials comprising optional oxide and a combination of species characterized by the following formula (2):



wherein “M” is magnesium (Mg), calcium (Ca), strontium (Sr), or barium (Ba), “F” is fluoride, “X” is chloride (Cl) or bromide (Br), “I” is iodide, M^a is sodium (Na), potassium (K), rubidium (Rb), or cesium (Cs), X^a is fluoride (F), chloride (Cl), bromide (Br), or iodide (I), “A” is europium (Eu), cerium (Ce), samarium (Sm), or terbium (Tb), “Q” is BeO, MgO, CaO, SrO, BaO, ZnO, Al₂O₃, La₂O₃, In₂O₃, SiO₂, TiO₂, ZrO₂, GeO₂, SnO₂, Nb₂O₅, Ta₂O₅, or ThO₂, “D” is vanadium (V), chromium (Cr), manganese (Mn), iron (Fe), cobalt (Co), or nickel (Ni), “z” is

0 to 1, “u” is from 0 to 1, “y” is from 1×10^{-4} to 0.1, “e” is from 0 to 1, and “t” is from 0 to 0.01.

13. A radiographic imaging assembly that has a system speed of at least 1400 and comprises:

A) a symmetric radiographic silver halide film having a film speed of at least 1000 and comprising a support that has first and second major surfaces and that is capable of transmitting X-radiation,

said radiographic silver halide film having disposed on said first major support surface, two or more hydrophilic colloid layers including a first silver halide emulsion layer, and having on said second major support surface, two or more hydrophilic colloid layers including a second silver halide emulsion layer,

each of said first and second silver halide emulsion layers comprising tabular silver halide grains that have the same composition, independently an aspect ratio of from about 35 to about 45, an average grain diameter of at least $4.0 \mu\text{m}$, and an average thickness of from about 0.09 to about $0.11 \mu\text{m}$, and comprise at least 98 mol % bromide and up to 0.5 mol % iodide, both based on total silver in said grains,

said film further comprising a protective overcoat on both sides of said support disposed over all of said hydrophilic colloid layers,

wherein said tabular silver halide grains in said first and second silver halide emulsion layers are dispersed in a hydrophilic polymeric vehicle mixture comprising from about 0.25 to about 1.5% of deionized oxidized gelatin, based on the total dry weight of said hydrophilic polymeric vehicle mixture,

the coverage of silver on each side of said support is from about 18 to about 24 mg/dm^2 and the polymer vehicle coverage on each side of said support is from about 30 to about 40 mg/dm^2 , and

B) a fluorescent intensifying screen having a screen speed of at least 600 and a screen sharpness measurement (SSM) value that is at least 1.1 times that of reference Curve A of FIG. 4 at a given spatial frequency, and that comprises a terbium activated gadolinium oxysulfide phosphor capable of

absorbing X-rays and emitting electromagnetic radiation having a wavelength greater than 300 nm, said phosphor being coated in admixture with a polymeric binder in a phosphor layer onto a flexible polymeric support and having a protective overcoat disposed over said phosphor layer.

14. The radiographic imaging assembly of claim 13 wherein two fluorescent intensifying screens are arranged in association with said radiographic silver halide film, one on either side thereof.

15. A method of providing a black-and-white image comprising exposing the radiographic silver halide film in the radiographic imaging assembly of claim 1 and processing said film, sequentially, with a black-and-white developing composition and a fixing composition, the processing being carried out within 90 seconds, dry-to-dry.

16. A method of providing a black-and-white image comprising exposing the radiographic silver halide film in the radiographic imaging assembly of claim 13 and processing said film, sequentially, with a black-and-white developing composition and a fixing composition, the processing being carried out within 90 seconds, dry-to-dry.

17. The method of claim 14 wherein the black-and-white image so provided is used for a medical diagnosis.